CHARGE NUMBER: 1804

PROGRAM TITLE: CO_2 Expansion

PERIOD COVERED: March 1 - 31, 1977

PROJECT LEADER: L. M. Sykes

I. Post Expansion Heat Treatment

Further study of continuous post expansion heat treatment (PEHT) of DIET tower product using the vibrating conveyor has indicated an increase in CV with increased velocity in the one to three feet/second range. However, the increased velocity was coupled with increased residence time due to bed fluidization. Also, at three feet/second velocity, plug flow through the conveyor deteriorated.

A test to evaluate subjective and compacimetric properties of continuous PEHT DIET is in progress. The PEHT filler for this test showed 25 CV (12 CCV) units increase after rapid reordering compared to the control DIET.

Most of the PEHT DIET has been rapidly reordered in a reordering cylinder. Results to date have shown similar CV losses for control and PEHT DIET through the reordering cylinder. These CV losses are slightly greater than what has been experienced with Proctor and Schwartz reordering. Sieve testing shows a 5-10% longs reduction of PEHT material through the reordering cylinder. Design modifications to reduce this breakage are being investigated.

Direct expansion of both liquid and gas impregnated MF bright in the vibrating conveyor has given relatively poor CV results with values around 50 cc/10g for both impregnations.

II. Gas Impregnation

Utilizing the newly installed bulker/feeder, gas impregnation experiments have begun involving 800 and 500 psig impregnation pressures and one- and ten-minute impregnation times. Consistent with past experiments in the Phase III system, 800 psig gave better CV results than 500 psig. However, the CV levels at 800 psig (~60 cc/10g) were significantly lower than liquid impregnated values. Impregnation time showed little effect at either pressure.

Post expansion heat treatment of gas impregnated DIET was carried out at 400°F with steam for 40 seconds. Little CV improvement was found with 500 psig DIET; however, 800 psig DIET showed CV increases ranging from 8 to 15 units (6 to 10 CCV units). These results are consistent with earlier findings that CV increase with PEHT is greater for well expanded filler.

III. Miscellaneous

Five additional samples have been expanded for Airco.

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